

REMARKS

Claims 1-22 are pending in the application. Claims 3-5, (6/3-5), 7-22 are withdrawn from consideration. Claims 1, 2, 6/1 and 6/2 are rejected. Claim 1 is amended and claim 2 is cancelled herein.

Claim Rejection under 35 U.S.C. §112, second paragraph

Claim 2 and 6/2 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner asserts that in claim 2, the “triangular” (line 2) embodiment (relating to the pyramid/cone embodiment of Fig. 7) is not consistent with the “plate-like” (line 4 of claim 1) embodiment (of Figure 6).

Applicants herein cancel claim 2 and amend claim 6 to no longer depend from claim 2. Therefore, Applicants submit that the rejection has been rendered moot.

Claim Rejection under 35 U.S.C. §102

Claims 1 and 2 are rejected under 35 U.S.C. §102(b) as being anticipated by Toda et al. The Examiner asserts that the overhanging part of the probe of Fig. 6C represents a probe portion (the part from the support to the pointed terminal portion) and an additionally sharpened terminal end portion of the probe (the pointed part) that the thickness of the plate. As to claim 2, the Examiner notes the triangular shape of element 1103, and that the two sides (front and back) that define the tip are angled relative to the horizontal “bottom” of the probe portion where section 1103 meets section 1102.

Applicants herein cancel claim 2, thus mooting its rejection, and herein amend claim 1 to clarify the invention. Thereafter, Applicants submit that the rejection has been overcome because the cited reference does not teach or suggest all of the claimed limitations in the invention.

Applicants' amendment of claim 1 is to define the invention by clarifying the following four points:

Said probe portion is inclined by a certain angle from the lever portion (based on the construction shown in Figs. 2, 3B, and 6 and the description on page 12, line 23 to page 13, line 2 of the specification);

The terminal end portion is reduced gradually in thickness toward a tip (based on the structure shown in Fig. 6);

Two sides of the probe portion containing the terminal end portion are inwardly bent (based on the structure shown in Figs. 2, 14, 3C and the construction of current claim 2); and

The tip is terminated only at one point (based on the construction shown in Fig. 2 and Figs. 3A to 3G).

Applicants note that the invention according to amended claim 1 of the present case comprises the following constituent features (a) to (i):

- (a) an SPM cantilever comprising a support portion,
- (b) a lever portion extended from the support portion,
- (c) a probe portion formed at a free end of the lever portion,
- (d) wherein said probe portion has a generally plate-like form and is inclined by a certain angle from the lever portion,

- (e) the probe portion has an additionally sharpened terminal, end portion,
- (f) the terminal end portion has its length greater than the plate thickness thereof and is reduced gradually in thickness toward a tip of the terminal end portion,
- (g) the tip is located inwardly of the planes extended from the front and back sides of a base portion of the plate-like probe portion,
- (h) two sides of said probe portion containing said terminal end portion are inwardly bent, and
- (i) the tip is terminated only at one point.

In other words, the probe portion (2) is formed of two portions, i.e., a base portion and the terminal end portion (3); and the terminal end portion (3) is defined by the above (f), (g), (h) and (i) so as to achieve a sharpened structure.

Applicants note that in Figs. 6A, 6b, 6C and Fig. 7A of Toda, on the other hand, probe chip 1100 corresponding to SPM cantilever of the present case is shown as mentioned in column 9, lines 37 to 56 where 1102 is not an SPM cantilever itself but is a cantilever or elastic member section; and 1103 is a probe section. The probe section 1103 then has a uniform thickness thinner than the cantilever 1102 and is caused to project parallel from the cantilever 1102. Here, the portion pointed out by the Examiner as base portion of the plate like probe portion is the cantilever or elastic member section 1102. Further, 1106 and 1101 are two vertexes of the plate—like probe section 1103 having a uniform thickness and are the two terminal points at each of which three ridges including one common ridge are terminated,

In comparing amended claim 1 with Toda, Applicants note that while the lever portion and tip of claim 1 of the present case correspond to the cantilever or elastic member section and

vertex of Toda, respectively, Toda does not contain any structure corresponding to the sharpened terminal end portion provided in the probe portion in present claim 1.

Applicants note the Examiner's assertion that the sharpened terminal end portion of claim 1 of the present case corresponds to the vertexes of Toda. Applicants note, however, that the vertexes of Toda are simply the terminal points, and are significantly different from the sharpened terminal end portion of present claim 1 having the constituent features (f) and (g), where it has a length greater than the plate thickness and its thickness is gradually reduced toward its tip, and the tip is located inwardly of the planes extended from the front and back sides of the base portion of the plate-like probe portion. Furthermore, while the tip of present claim 1 corresponding to the vertex of Toda exists as the only one tip, Toda is provided with two vertexes. The reason for this is that the probe section 1103 of Toda has a plate-like form having a uniform thickness that is extended to the location where the vertexes are formed.

Moreover, in page 2, lines 14 to 21 of the Office Action, the Examiner pointed out "Toda et al teach... the plate like probe portion", corresponded the construction of probe section 1103 to the cantilever or elastic member section 1102 of Toda, and stated that SPM cantilever of claim 1 of the present case is disclosed in Toda. However, Applicants note that the main constituent features (e), (f), (g), (h), (i) of SPM cantilever according to present claim 1 describe the sharpened terminal end portion (3) with respect to the probe portion (2). Therefore, Applicants respectfully submit that the Examiner's recognition of the corresponding relation of the component members is believed to be incorrect.

In claim 1 of the present case, a part of the construction of the original claim 2 is contained as constituent feature (h). Applicants submit that this is in contrast with Toda.

In Toda, its side faces are inclined simply due to the fact that the probe portion 1103 is formed into a triangular shape. By contrast, constituent feature (h) of amended claim 1 of the present case is the construction where the two sides of the probe portion containing the terminal end portion are bent inward. This construction is to improve performance by cutting off the unnecessary portion as a probe portion. Accordingly, constituent feature (h) of amended claim 1 of the present case is different from the construction of the probe section 1103 of Toda, and such construction (h) is neither disclosed nor suggested in Toda.

As the above, since Toda contains none of the constituent features (e) to (i) of amended claim 1 of the present case, amended claim 1 of the present case is believed to be fully patentable.

Claim Rejection under 35 U.S.C. §103

Claims 6/1, 6/2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda et al. The Examiner asserts that it would have been obvious to employ silicone nitride as the material because Toda teaches use of silicone nitride to provide for a tip that provides both reduced wear and greater reproducibility of measurement.

Applicants herein cancel claim 2, rendering the rejection of 6/2 moot. With respect to 6/1, Applicants respectfully submit that the above amendment and arguments sufficiently distinguish claim 1 from the cited reference. And because claim 6 is dependent from claim 1 and necessarily includes at least its limitations, Applicants submit that claim 6 should be patentably distinct as well.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

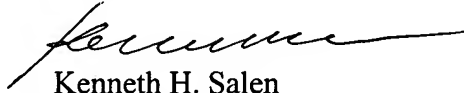
Response under 37 C.F.R. §1.116
Attorney Docket No. 032047
Serial No. 10/694,358

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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